CLAIMS

What is claimed is:

1. A circuit for reducing adjacent pixel interdependence in a liquid crystal display, comprising:

    a decomposer for dividing an input signal into a plurality of signals having at least a high brightness signal and a low brightness signal;

    a split low pass filter arrangement for independently low pass filtering rising transients and falling transients in said low brightness signal to reduce adjacent pixel interdependence;

    a delay matching circuit for the high brightness signal; and

    means for combining the delayed high brightness signal with the filtered low brightness signal to provide an output with reduced sparkle artifacts.

2. The circuit of claim 1, wherein the split low pass filter arrangement comprises at least two low pass filters, at least one associated delay circuit, and a maximum selector circuit.

3. The circuit of claim 2, wherein the at least two low pass filters and at least one associated delay circuit comprise a first low pass filter circuit, a second low pass filter circuit with an associated delay circuit, and a third low pass filter circuit with another associated delay circuit, wherein the maximum selector circuit selects the maximum of the first, second, or third low pass filter circuits.

4. The circuit of claim 3, wherein the second low pass filter circuit is symmetrical with a linear phase response.

5. The circuit of claim 1, wherein the liquid crystal display is a liquid crystal on silicon (LCOS) display.

1   6.   The circuit of claim 3, wherein the third low pass filter circuit comprises an
2   asymmetric 5-tap filter with coefficients 8/16, 4/16, 2/16, 1/16, and 1/16
3   preceded by a delay of 4 sample periods.

1   7.   The circuit of claim 3, wherein the first low pass filter comprises an
2   asymmetric 5-tap filter with coefficients 1/16, 1/16, 2/16, 4/16, and 8/16.

1   8.   The circuit of claim 3, wherein the second low pass filter comprises a
2   symmetric 3-tap filter with coefficients 3/16, 10/16, and 3/16, preceded by a
3   delay of 3 sample periods.

1   9.   A method for reducing adjacent pixel interdependence in a liquid crystal
2   display, comprises the steps of:
3   dividing an input signal into at least a high brightness signal and a low
4   brightness signal;
5   independently low pass filtering rising transients and falling transients
6   in said low brightness signal to reduce adjacent pixel interdependence;
7   delay matching the high brightness signal with said filtered low
8   brightness signal; and,
9   combining the delay matched high brightness signal and the filtered
10   low brightness signal to provide an output signal with reduced sparkle
11   artifacts.

1   10.   The method of claim 9, wherein said low pass filtering step comprises the
2   steps of
3   low pass filtering said low brightness signal according to a first filtering
4   rate to generate a first filtered value;
5   delay matching and low pass filtering said low brightness signal
6   according to a second filtering rate to generate a second filtered value;
7   selecting as a filtered output for use in said combining step the
8   maximum of said first and second filtered values.

11.   The method of claim 9, wherein said low pass filtering step comprises the steps of

    low pass filtering said low brightness signal according to a first filtering rate to generate a first filtered value;

    delay matching and low pass filtering and said low brightness signal according to a second filtering rate to generate a second filtered value;

    delay matching and low pass filtering and said low brightness signal according to a third filtering rate to generate a third filtered value;

    selecting as a filtered output for use in said combining step the maximum of said first, second and third filtered values.

12.   The method of claim 9, wherein said low pass filtering step comprises the step of changing the shape of rising and falling pulses edges in said low brightness signal.